WSLH Wisconsin State Laboratory of Hygiene

Results

News from Wisconsin's Public Health and Environmental Laboratory

Issue No. 25 Summer 2000

Building up Wisconsin's laboratory capacity for response to bioterrorism

by Stephanie Kuenn, WSLH Public Affairs

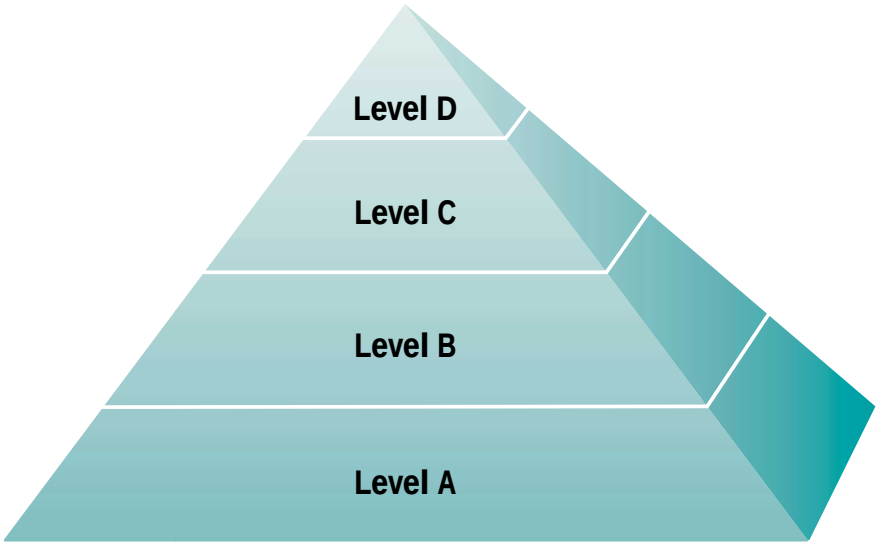
As we reported in the Winter 2000 issue of *Resu!ts*, Wisconsin is the recipient of a $1.12 million cooperative agreement from the CDC—overseen by the state Department of Public Health—to strengthen public health preparedness for and response to bioterrorism. It is part of a much larger federal bioterrorism preparedness effort.

Dr. Peter Shult, director of the WSLH Communicable Disease Division, is overseeing a section of the grant that will strengthen the capabilities of the state's two largest public health laboratories—the WSLH and the Milwaukee Health Department Laboratories—to identify likely biological threat agents, as well as train clinical and local public health labs to recognize these agents and respond appropriately.

The ultimate goal guiding the laboratory section of the federal bioterrorism preparedness effort is the development of a nationwide, four-tier laboratory network, as seen in the pyramid figure at right. As part of this network, Wisconsin's labs will be prepared for any sort of infectious disease outbreak, not just a bioterrorism event.

To briefly explain the network:

Level A laboratories are those with low-level biosafety facilities. They will be capable of presumptive diagnosis of priority bioterrorism agents that will then be forwarded to labs with higher-level biocontainment facilities for confirmatory testing.



Level B labs are state labs and other large public health and private labs that provide definitive testing for specific agents and, when necessary, respond to announced events, such as envelopes which supposedly contain anthrax. Level B labs will, when necessary, forward specimens to higher level labs.

Level C labs are located at state health agencies, academic research centers and federal facilities. This level has the capacity to perform toxicity and other advanced diagnostic testing and will evaluate new tests and reagents.

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Taking a long-range view

Cindy McIntosh, M.T. (ASCP), M.A. became WSLH assistant director in 1990 and associate director for administration in 1993. She is also director of the WSLH Resource Management Division. She earned her bachelor's degree from Edgewood College in Madison and her master's degree in health care administration from Central Michigan University.

With many current and long range strategic issues facing the Wisconsin State Laboratory of Hygiene (WSLH), the WSLH Board is taking a very active role in the development of a five-year strategic plan for the Lab. Dr. C. Everett Koop, former U.S. Surgeon General, stated, "Public health laboratories are an important national resource for safeguarding the health of our citizens." The WSLH Board recognizes their responsibility to ensure that Wisconsin's state public health laboratory continues its role on the front line of public health well into the future.

To begin their strategic planning process, the Board spent a cold, snowy day in January immersing themselves in the key issues of public health from the 30,000 mile view down to the 3,000 mile view. They looked at how these overarching issues and trends have affected the national public health system, private clinical and environmental laboratories and public health laboratories.

Then the Board got down to the nitty gritty and looked at threats to the WSLH: increasing costs, decreasing revenues, impact of constant change and a lack of public knowledge about public health in general and the role of the WSLH specifically. This was balanced by exploring opportunities such as: partnering, collaborating, expertise on the cutting edge, data dissemination, education and funding alternatives.

The Association of Public Health Laboratories (APHL) states that public health laboratories have a mandate to:

- Assess the health of their communities and the environment.
- Assure safe and disease-free communities.
- Investigate, identify, report and control threats to health and the environment.
- Screen for infectious, chronic and genetic diseases to prevent death and disability.
- Research and develop new methods to detect chemical and biological threats, including bioterrorism.
- Inform and educate the public and community officials about risks to health.
- Train laboratory professionals.
- Work to assure quality laboratory practices in private and public laboratories throughout the state.
- Participate in formulation of policies that assure the health and safety of our citizens.

Keep these "mandates" in mind as you read the following five-year goals developed by the WSLH Board.

Goal #1: Utilize the capacity and capability of qualified laboratories to effectively meet Wisconsin's public and environmental health needs.

Goal #2: Serve as a center of excellence in emerging technologies and issues in public and environmental research, practice and service.

Goal #3: Become a key resource in the integration and dissemination of public and environmental health information and knowledge.

Goal #4: Consistent with the Wisconsin Idea, develop public and private partnerships for research and testing to address public and environmental health goals.

Goal #5: Develop financial strategies that maintain the laboratory as a center of excellence to effectively meet Wisconsin's public and environmental health needs.

Working together over the next few months, the WSLH Board and the WSLH Strategic Leadership Team will finalize strategies, tactics and a timetable to ensure that Wisconsin's state public health laboratory remains strong and an integral part of our nation's health system.

Lab Capacity… *from page 1*

Level D labs are federal labs, like the CDC, which are highly specialized, maximum containment laboratories prepared to deal with rare diseases like smallpox or Ebola.

Currently, four laboratories in the state function together as a Level B Laboratory Network: WSLH, Milwaukee Health Department Laboratories, Milwaukee Veteran's Hospital and the Marshfield Clinic. The WSLH also operates as a Level C lab for Wisconsin.

The members of Wisconsin's Level B lab network have already responded to a series of hoaxes in the Milwaukee area this past winter. The Network labs meet routinely to review and further develop lab response. They also are developing strategies to train Level A labs in the state.

The next step in the laboratory capacity section is to work with the Level A labs—local public health and hospital/clinical laboratories—to develop their capabilities and lab network. To find out the needs and expectations of the Level A laboratories, Shult and his colleagues plan to send out a questionnaire in August to assess the following:

- knowledge of bioterrorism agents
- what the role of the Level A labs should be in the planning process
- technical aptitude
- biosafety levels
- other information

"We hope to use this questionnaire as a springboard for the training effort," Shult said. "This is an opportunity to better prepare Wisconsin's laboratories for the future. We need to work together to make the most of it."

For more information, contact Dr. Shult at **(608) 262-5419**.

A Multi-Level National Laboratory Response Network for Biological Terrorism

Level A: Early Detection of Intentional Releases of Biological Threat Agents. These are public health and hospital laboratories with low-level biosafety facilities (BSL-2 as a minimum). They will use clinical data and standard microbiological tests to decide which specimens and isolates should be forwarded to laboratories with higher level biocontainment facilities. Their staff will be trained in the safe collection, packaging, labeling and shipping of samples that may contain highly dangerous pathogens.

Level B: Core Capacity for Agent Isolation and Presumptive Level Testing of Suspect Specimens. These are state and local public health agency laboratories that test for specific agents and forward organisms or specimens to higher level laboratories. They will minimize false positives and protect Level C from overload. Ultimately this laboratory level will maintain capacity to perform confirmatory testing and characterize drug susceptibility. Most Level B laboratories will maintain BSL-2 biosafety facilities that may incorporate BSL-3 practices.

Level C: Advanced Capacity for Rapid Identification. These laboratories, which perform advanced and specialized testing, may be located at state health agencies, academic research centers and federal facilities. Ultimately, this laboratory level will have the capacity to perform toxicity testing and employ advanced diagnostic technologies such as nucleic acid amplification and molecular fingerprinting. These laboratories will participate in the evaluation of new tests and reagents and determine which assays may be transferred to Level B laboratories. Most Level C labs will maintain BSL-3 capacities, although certain specialized Level C laboratories (such as those that focus on PCR testing) may be at BSL-2.

Level D: Highest Level Containment and Expertise in the Diagnosis of Rare and Highly Dangerous Biological Agents. These are highly specialized federal laboratories with unique experience in diagnosis of rare diseases like smallpox and Ebola hemorrhagic fever; the ability to develop or evaluate new tests and methods, and the resources to maintain a strain bank of highly dangerous biological threat agents. Level D laboratories will maintain BSL-2, BSL-3 and BSL-4 biocontainment facilities and will be able to conduct all tests performed in Level A, B and C laboratories, as well as additional confirmatory testing and characterization, as needed.

Tracing metals' environmental effects: EHD begins work with new ICP Mass Spectrometer

By Stephanie Kuenn, WSLH Public Affairs

It seems like the newspapers run stories every day about the doomsday that our ecosystem is facing. People make predictions about the effects of air and water pollution on our future. However, an accurate assessment of the impact of pollutants in our environment requires the development of new scientific tools that can be used by multi-disciplinary scientific teams.

The WSLH's Inorganic Chemistry section, a part of the Environmental Health Division, has played an active role in many environmental studies to help clarify the impact of trace metals in our environment. The WSLH's commitment to this cause was recently enhanced by purchasing a new state-of-the-art Inductively Coupled Plasma Mass Spectrometer (ICPMS) to further expand trace metals analysis capabilities. The new $200,000 instrument will allow WSLH scientists to measure and examine trace metals from very low concentrations in water and air samples.

"There's a lot of interest in examining the nature and characters of metals, and seeing how they associate with certain toxicities," said Jamie Schauer, Ph.D, who heads up the WSLH Air Quality unit. "The new instrument will allow us to understand the chemical characteristics of metals in air and water, and will improve our knowledge of those metals' effects on the environment and human health."

Samples are analyzed by the ICPMS by pumping a liquid sample into the instrument from an ultra clean Teflon sample bottle. The sample passes through plasma to form ions that can be detected by the instrument in order to measure ultra-trace levels of virtually any metal. The ICPMS can also analyze airborne particulate matter samples, which must be digested in acid before analysis.

The new instrument is equipped with a collision cell and cold plasma capabilities, which allow the analysis of virtually all trace metals. Such capabilities are not possible with traditional ICP mass spectrometers. These new capabilities are very important for the analysis of atmospheric particulate matter samples.

Another advantage of the new ICPMS is that it will allow us more opportunities to collaborate with our campus partners, Schauer said. UW-Madison's College of Engineering and Water Chemistry Program shared the cost of the instrument.

"One of the real beauties of the instrument is that it allows us to couple the work of national experts with advanced public health work," Schauer said. "It allows the State Lab to be involved in cutting-edge research going on at the UW. We expect there will be graduate students from the Water Chemistry Program and staff from both the Water Chemistry Program and the State Lab working together on many projects."

Since the new instrument arrived, the State Lab has been able to work with the Water Chemistry Program on projects involving the Great Lakes and air chemistry. In July and August, work will begin in Milwaukee to sample air in underground motor vehicle tunnels near the airport and by the courthouse to better understand motor vehicle emissions of trace metals.

The new ICP Mass Spectrometer is located in the Trace Metals Clean Room.

"Everything we're doing is to protect human health and the health of the ecosystem," Schauer said. "We're now able to do more chemical analysis so we can understand why things happen and develop strategies to control and prevent problems that threaten human health."

Wisconsin rabies cases: 1999-2000

***Jim Powell** is the senior microbiologist in the WSLH Rabies Laboratory. He graduated with a master's degree in bacteriology from the University of Wisconsin. He serves on a U.S. Public Health Service steering committee, developing a national plan for rabies control in the United States and is the technical consultant for the national rabies proficiency testing program.*

For calendar year 1999, the WSLH Rabies Unit received 1,778 specimens for diagnosis, an increase of 3.7 percent from 1998 (1,714 specimens). Of the animals received, 20 were diagnosed as positive for rabies by the direct fluorescent antibody test; 12 skunks (60.0 percent), three dogs (15.0 percent), one horse (5.0 percent) and four bats (20.0 percent).

One additional skunk which originated from Polk county (far western Wisconsin) was diagnosed to be rabies-positive at the Minnesota Department of Health Laboratory, which brought the total to 21 positive animals for the year (*see below*).

Two additional rabies-positive bats originating from Kern National Wildlife Refuge in California were received from the National Wildlife Health Center (in Madison, WI) and were identified as Mexican free-tail bats (*Tadarida brasiliensis*). These positive bats were reported to the California Department of Health for inclusion in their yearly total.

Monoclonal antibody typing of the virus infecting the four in-state bats confirmed infection with the variant of the rabies virus typically associated with "big brown bats" (*Eptesicus fuscus*). Monoclonal antibody typing of the rabies virus infecting the four domestic animals confirmed that they were infected with the rabies virus variant associated with the striped skunk in the north central United States.

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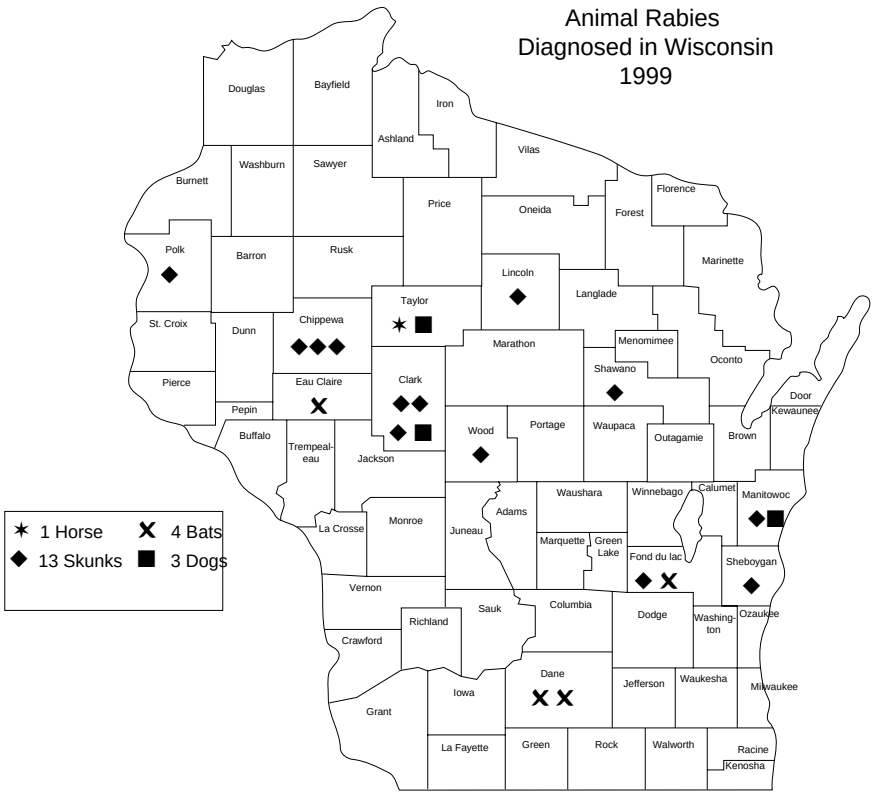

Rabies ..... *from page 5*

All twelve skunks diagnosed positive for rabies at the WSLH were involved in domestic animal exposures, including 10 cases involving dogs, one case involving two horses and one case involving bovine exposure. Six of the exposed dogs were vaccinated for rabies, one was unvaccinated and the status of the other three was unknown.

Currently immunized domestic dogs, cats and ferrets that are exposed to rabid animals should be given a booster vaccination against rabies, followed by a 60 day quarantine during which time the exposed animal is kept confined to the owner's premises.

Unvaccinated domestic animals that are exposed to rabies should be euthanized, due to the risk of developing rabies and the lack of efficacy of primary rabies vaccination after exposure. If the owner is unwilling to do this, the domestic animal should be quarantined in strict isolation for six months and may be vaccinated against rabies during the last month of quarantine. Human contact should be limited and contact with other domestic animals should be prevented during quarantine.

Both of these quarantines apply when domestic animals are exposed to rabid or suspected rabid animals and should not be confused with the 10-day quarantine of a dog, cat or ferret that bites a human.

Update for 2000

It appears that the extremely wet weather of early summer may have had a dampening effect on the number of positive animals received in the Rabies Unit. As of June 16, 2000, we have diagnosed five positive animals, seven less than were received in 1999 by this time. Positive animals in 2000 include three bats, one dog and one bovine. Three species were represented by the bats including a single "big brown bat" (*Eptesicus fuscus*), one "small brown bat" (*Myotis lucifugus*) and one "red bat" (*Lasiuris borealis*). The dog and bovine were confirmed to be infected with the north central skunk variant of rabies virus.

It remains to be seen what the long term effect, if any, the weather will have on the number of animal rabies cases in Wisconsin. A very wet early summer in 1993 saw a 34 percent decline in rabies cases. However, because of the difficulty in organizing a controlled study, any direct causal link between weather and animal populations is strictly speculative.

Further complicating our ability to establish a link between the weather and rabies cases is the fact that rabies surveillance is a passive process. Animals received at the laboratory for diagnosis have distinguished themselves by coming in contact with humans or domestic animals, the likelihood of which is dependent on the density of humans, domestic animals and wild animals.

We in the WSLH Rabies Unit would like to wish you a healthy, happy summer that is free of concerns about rabies. As always, rabies vaccination of domestic companion animals and strict avoidance of contact with wild animals and unfamiliar domestic animals, especially sick individuals, will minimize human contact with this deadly disease. For those that run astray of this advice, assistance can be obtained from local health departments and from the agencies highlighted in the accompanying box.

Who to contact

Human Exposure Management

Division of Public Health
WI Department of Health and Family Services

(608) 266-2154

Animal Exposure Management

Division of Animal Health
Department of Agriculture, Trade and Consumer Protection

(608) 224-4888

Specimen Handling and Laboratory Testing

Rabies Unit
Wisconsin State Laboratory of Hygiene

(608) 262-7323

Skeeter season: Summer is prime time for mosquito-borne illness like LAC, WNV

We've had an unusually wet spring and early summer in many parts of the state. Not only has this contributed to wet basements, saturated fields and flooded watersheds, but it also has increased the mosquito population.

Some mosquitoes carry arboviral diseases. In Wisconsin, the arboviral diseases we may encounter are members of three groups: eastern equine encephalitis (EEE) and western equine encephalitis (WEE) in the Alphavirus group; St Louis encephalitis (SLE) in the Flavivirus group; and LaCrosse encephalitis (LAC), Jamestown Canyon and snowshoe hare strains in the California group of Bunyaviridae.

Of these arboviruses, only LaCrosse encephalitis is considered endemic, with cases occurring every year in Wisconsin and other upper Midwest states.

Typically, we see from five to 30 cases of La Crosse encephalitis in Wisconsin each summer. Most occur in the southwest quadrant of the state from June through October in children under the age of 16. The incubation period is from three to seven days and symptoms include a sudden onset of fever, headache, confusion, stupor, coma, tremors and occasional convulsions.

Case-fatality rates are <1 percent, although hospitalization is common due to the alarming nature of the symptoms and the fact that cases occur primarily in young children.

Last year in Wisconsin, there were 11 cases of California encephalitis (presumably LAC). They ranged in age from two to 54, with an average age of 6.9 (excluding the 54-year-old). Of the 11 cases, seven were presumptive (single IgM positive) and four were confirmed by demonstrating a significant rise in antibody level in paired serum testing. The 54-year-old male from LaCrosse was a confirmed case. LAC in an individual this age is rare, but has been observed previously.

The onset dates of symptoms ranged from late June to late September. Cases occurred in seven different counties (Dane, Grant, Monroe and Richland—1 case each; LaCrosse, Pierce—2 cases each; Crawford—3 cases.)

The mosquito, *Aedes triseriatus*, commonly called the tree-hole mosquito, is the vector species for LaCrosse encephalitis. It normally feeds on small mammals, with humans only as an incidental host. It prefers bushy, wooded habitat and breeds in any small stagnant accumulation of water, such as those found in old tires, cans and, of course, tree holes. With the drenching rains we have experienced, those breeding locations have multiplied. Prevention methods include avoidance of bushy wooded areas, use of DEET based repellants, and elimination of possible breeding sites. Since Aedes is a daytime feeder, children are at increased risk of exposure when frequenting mosquito habitat areas.

West Nile Virus in the U.S.

Last summer, in a dramatic development, neurological infection due to West Nile virus (WNV) was described in patients in and around New York City. Although initial reports labeled it as St. Louis encephalitis, subsequent investigation confirmed it as West Nile virus, a closely related virus that serologically cross-reacts with the St. Louis encephalitis virus.

In the Flavivirus group, the WNV has been reported in Africa and Eurasia. A large outbreak occurred in Bucharest, Romania, in 1996-97, with more than 500 clinical cases and a case-fatality rate approaching 10 percent.

The New York outbreak resulted in 62 CDC-confirmed cases and seven deaths. The incubation period is from three to 15 days, and symptoms include fever, headache and body aches, often with skin rash and swollen lymph glands. More severe infection may by marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis and, rarely, death.

Along with the mortality associated with the human cases, an indicator of the outbreak was the death

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***Bob Bennin** is a supervisor in the WSLH Communicable Disease Division. He's been with the WSLH for 28 years and has a bachelor's degree in biology from the UW-Madison.*

of wild birds, especially crows, and the deaths of exotic bird species at the Bronx Zoo. The last 1999 case occurred September 22 after control measures and cooler temperatures effectively ended the mosquito season. Although no human cases have yet been reported this summer, evidence of WNV overwintering has been found in crows, red-tailed hawks and blue jays.

How the virus made the trip to the North American continent is a mystery, although in light of the fluidity of travel around the globe, the more timely question may be, which geographically restricted microbial agent will hop a ride the next time?

Although the arboviruses have been much in the news, they account for only a small percentage of the viral central nervous system infections. Most are likely to be caused by the enteroviruses, which are transmitted person-person most readily during the warm summer months.

Testing for the arboviruses and the enteroviruses is available at the WSLH. Arboviral diagnosis is most readily done with serology, requiring the submission of a serum and CSF, if available. The WSLH uses CDC-developed EIA's for IgG and IgM for EEE, WEE, SLE, LAC, and WNV.

Enterovirus diagnosis is best done by attempting to isolate the virus from stool, throat swab, CSF, tissue or vesicular fluid. Consult the WSLH on-line Reference Manual: **www.slh.wisc.edu/manual/** for specific specimen requirements, or contact the lab at **(608) 262-0248**. For additional information, consult the CDC website: **www.cdc.gov/ncidod/dvbid/arbor/arboinfo.htm**

Wisconsin virology lab network marks fifth anniversary

Members of the Wisconsin Virology Laboratory Information Network met in Madison for their tenth annual meeting on June 22, 2000. Representatives of 10 of the 11 "full-service" virology laboratories in Wisconsin attended the meeting, along with representatives of the virology laboratory at Rockford Memorial Hospital, Rockford, Illinois.

The meeting consisted of presentations on specific virus groups, interesting cases which laboratories encountered during the last year, discussions about current methods, and an update on the Laboratory Information Network.

In addition, Dr. Chris Olsen, assistant professor of public health at the UW-Madison Veterinary School, made a presentation on "Influenza: Pigs, People and Public Health". Dr. James Gern, UW associate professor of medical science and co-investigator of the Childhood Origins of Asthma (COAST) research project, and Ms. Kiva Adler, R.N., study coordinator, gave presentations on "Viral Respiratory Infections in Infants at Risk for Childhood Asthma". Dr. Pete Shult, WSLH Communicable Disease Division director, made a presentation on "Bioterrorism Response Preparedness Planning in Wisconsin".

This year marked not only the tenth year of the annual meetings, but also the fifth year of the Laboratory Information Network. Both the meeting and the network are unique to Wisconsin and have made valuable contributions to improving laboratory-based surveillance of influenza and other viruses in the state. The virology laboratories of the listed institutions participate on a voluntary basis and should be commended for their contributions and commitment:

- Bellin Memorial Hospital, Green Bay
- St. Vincent Hospital, Green Bay
- Gundersen Lutheran, LaCrosse
- St. Marys Hospital Medical Center, Madison
- WSLH, Madison
- Marshfield Laboratories, Marshfield
- Milwaukee City Health Department, Milwaukee
- United Dynacare, Milwaukee
- Childrens Hospital of Wisconsin, Milwaukee
- Medical Sciences Laboratory, Wauwatosa

Enterovirus 71 isolated in Wisconsin

The WSLH identified Wisconsin's first Enterovirus 71 (EV 71) isolate during 1999. The enterovirus was first isolated by Marshfield Laboratories from a one-month-old infant; the virus was forwarded to the WSLH for further identification as part of the surveillance conducted through the Wisconsin Virology Laboratory Information Network.

EV 71 was first isolated in California in 1969 from a nine-month-old infant with encephalitis. Like infections with other enteroviruses, EV 71 infections may be asymptomatic or may present as diarrhea, rash, vesicular lesions on the hands, feet and oral mucosa, herpangina, aseptic meningitis, encephalitis, myocarditis, or some combination of these conditions.

EV 71 has circulated continually in the U.S. since 1977 and activity has been geographically widespread. In a New York State study, antibody was detected in 26 percent of healthy adults. In the past, the diagnosis of EV 71 may have been missed because of sub-optimal specimens and the difficulties encountered with EV 71 isolation and identification in the laboratory.

EV 71 infections are significant because they have the capacity to cause large epidemics in addition to sporadic cases, may be fatal in young children and are frequently complicated by neurologic disease.

EV 71 isolation has been most successful from stool samples, with rectal swabs a poor substitute. Isolation from other specimens, such as skin vesicles and throat swabs, has in general been less successful when specimens are collected at the onset of neurologic disease, possibly due to absence of virus after the long incubation period. When infection has progressed to neurologic disease, CNS tissue, especially brainstem tissue, is the best specimen. CSF has had very poor virus isolation yield but often is the only sample submitted for testing in the case of neurologic disease. This is similar to poliovirus, which is rarely isolated from CSF even in the presence of paralysis. In the Hungarian epidemic of 1978 none of the 422 CSF samples yielded virus.

Enteroviruses are members of the picornavirus family and historically have been divided into subgroups largely on the basis of differences in the range of hosts and pathogenicity: poliovirus, group A coxsackievirus, group B coxsackievirus and echovirus. This subclassification has proved useful, but there is some ambiguity and overlap. For these reasons, since 1970, newly identified enteroviruses have been designated simply as "enterovirus" and given a number, beginning with enterovirus 68 and extending to the most recently recognized member, enterovirus 71.

The clinical presentations most significant in large outbreaks have been hand-foot-mouth disease (HFMD) and poliomyelitis-like disease. HFMD peaks in summer and fall and most commonly affects young children. It is characterized by several days of fever and vomiting; ulcerative lesions in the buccal mucosa, tongue, palate and gums; and lesions of the hands and feet, which are usually vesicular and occur on the dorsal surfaces, but may also occur on the palms and soles. EV 71 can also cause acute flaccid paralysis indistinguishable from that caused by paralytic poliomyelitis.

Since first recognized, EV 71 infection has been reported in at least 12 large and small outbreaks throughout the world. EV 71 outbreaks causing more that 20 deaths each have been reported in Bulgaria in 1975, Hungary in 1978, Malaysia in 1997 and Taiwan in 1998.

In Bulgaria in 1975, 705 cases of EV71-associated central nervous system (CNS) disease were reported. Paralysis was seen in 149 (21 percent) of these cases and 44 of those with paralysis died. Ninety-three percent of the fatalities occurred in children under age five.

Malaysia's 1997 epidemic of HFMD affected thousands of young children, some of whom died from disease progression to brainstem encephalitis and neurogenic pulmonary edema.

In Taiwan, sentinel physicians reported 129,106 cases of suspected enterovirus infections during 1998. Labs confirmed 782 of these cases as: EV 71 (62 percent), Coxsackie A16 (27 percent), and other enteroviruses (11 percent). Most of the severe or fatal cases were EV 71 infections in children under age five. This was the first time an EV 71 infection was detected by a surveillance system, providing the basis for immediate public health action.

The WSLH will continue to monitor enterovirus isolates in Wisconsin for EV 71 with its potentially significant public health implications.

***Jane LaFlash** is a microbiologist in the WSLH Communicable Disease Division. She has worked at the WSLH for 25 years.*

Infertility prevention project focuses on chlamydia

Untreated infection with Chlamydia *trachomatis* is thought to be a major cause of infertility in the United States today. Although over 500,000 chlamydia infections were detected and treated in 1998, actual infection rates are probably closer to 3 million. Significant underreporting occurs due to the asymptomatic nature of the majority of infections, and inadequate screening especially in males.

Costs associated with untreated chlamydia infections are estimated to exceed $2 billion per year and also include sequelae such as pelvic inflammatory disease (P.I.D., a frequent precursor to tubal infertility) and life-threatening ectopic pregnancy.

In 1993 the federal government launched a national Infertility Prevention Project (IPP), administered through CDC and the Office of Population Affairs (OPA) and aimed at reduction of STD-related infertility beginning with chlamydia, through cooperation between Family Planning and STD programs and public health laboratories.

The project began in the Northwest and parts of the East Coast and continued with the systematic addition of the rest of the country, ten regions in all. Wisconsin is a part of Region V (along with IL, IN, MI, MN and OH) which came on board in 1995.

Because of resource constraints, none of the regions are fully funded, meaning that the IPP screening programs are not adequate to cover all of the women at risk.

The Region V Infertility Prevention Project (RVIPP) Advisory Committee met in Madison in June 2000. The Advisory Committee meets approximately twice yearly and consists of individuals from STD and Family Planning programs and public health laboratorians from each of the six states in the region, as well as advisors and coordinators from CDC, the Association of Public Health Laboratories (APHL), Health Care Education and Training (HCET) and other organizations. Committee members get updates and provide input on such things as funding issues, projects going on within the region and regional data reports.

In addition, the committee breaks into subcommittees to work on regional objectives more specifically related to their particular field.

The Data, Training, Laboratory, and Client Services Subcommittees presented their progress in various areas which included summaries of descriptive statistics on data collected in 1999 and distribution of a self-study training manual designed for new employees at clinics participating in IPP screening.

Wisconsin's leadedrship

Wisconsin has been a leader among RVIPP states in a number of areas. The WI Chlamydia Control Program did not begin with the appearance of IPP funding; testing for chlamydia began at the WSLH in 1978. Programmatic aspects soon followed, such as using testing data to devise selective screening criteria, evaluation of new test technologies and development of algorithms to ensure that the largest possible proportion of existing infections is detected with available funding.

Bobbie McDonald *is a senior microbiologist in the WSLH Chlamydia Laboratory. She has a bachelor's degree in bacteriology from UW-Madison and is a member of the American Society for Microbiology.*

Participation in the RVIPP enhanced our efforts by fostering a closer partnership between the WSLH and the Wisconsin Division of Public Health. It also provided us with an opportunity to assist with infrastructure development and provide technical assistance in Region V states whose laboratories either did not perform testing for chlamydia or had done so on a limited basis.

Although each state lab still approaches chlamydia testing somewhat differently—using different methods and testing differing numbers and types of specimens—Region V states are currently working together on a number of issues. These include transitioning to more advanced testing methodologies, incorporation of gonorrhea testing and the testing of men into existing IPP screening programs, systems to monitor the

adequacy of specimens submitted for testing, and re-evaluation of selective screening criteria.

One of the biggest issues currently facing the WSLH and other public health labs is the utilization of improved testing technologies.

Four manufacturers now offer nucleic acid amplification (NAA) tests for chlamydia and gonorrhea, though most are still relatively expensive compared to conventional methods. However, development of higher throughput instrumentation, lower-cost assays and negotiation of national public health pricing, as well as strategies like pooling specimens have brought these high-performance assays to within reach of many screening programs.

Increased test requests also may result from the use of less invasive urine specimens for testing by NAA. The WSLH has been using NAA methods in some segments of our screening program for several years and plans to totally convert in the near future.

Conversion of screening programs to these methods will impact significantly more than just cost. For example, improved test sensitivity may generate more positive results; this can cause concern for clinicians, as well as epidemiologists if they were not prepared for the change.

The ability to test for both GC and Chlamydia from a single specimen, another advantage of the new tests, may cause an increase in requests for both agents.

Several other major projects that might impact STD screening programs are also in the works. We'll keep you informed about these projects as more data becomes available.

On the Road: The WSLH-DNR traveling water show

By Stephanie Kuenn, WSLH Public Affairs

When the Wisconsin Department of Natural Resources Regional Lab Certification staff noticed that many of the state's 300 small wastewater treatment plant laboratories had similar testing and quality control concerns, DNR employees knew something needed to be done.

The state's wastewater treatment labs are required to monitor their effluent for pollutants and report these data to the DNR to comply with discharge permits. DNR Regional Lab Certification Auditors noticed that many laboratories struggled with similar testing problems. The DNR staff also recognized that training was not available to the laboratories to help them deal with these analytical and quality control problems.

"It became obvious that these folks needed help," said George Bowman, a supervisor in the Inorganic Chemistry section of the WSLH's Environmental Health Division. "They didn't have a lot of training, and often, they received the wrong type of training."

Rick Mealy, who coordinates the DNR's regional laboratory certification program, contacted Bowman and Kay Marshall from the Wisconsin Rural Water Association to design a program to better train technicians at the small wastewater and commercial laboratories.

Mealy's idea was to blend his lab certification experience with Bowman and Marshall's environmental testing expertise to develop a well-rounded training plan. Training subjects varied from improving quality assurance, quality control and properly calibrating instruments to sampling and containment issues.

This was the birth of WSLH-DNR Traveling Water Show.

Armed with a PowerPoint™ presentation and the desire to help Wisconsin's wastewater laboratories improve their testing quality, Bowman and Mealy traveled around the state giving seminars.

The sessions—18 were held late last year and this spring, with another five planned for this fall—have been immensely popular. On average, 30 to 40 people attend, with some sessions having a turnout of almost 60 people.

The training is an excellent example of how the WSLH can fulfill its outreach mission.

"The main thing is we're providing these folks with the tools to help them improve their testing quality and better comply with Wisconsin's Lab Certification code," Bowman said. "It's improving Wisconsin's environmental health—this improves testing that's being done on the state's natural resources."

The program has met with much success—DNR Regional Auditors found a general improvement in quality control after the sessions were held. Also, the training slide shows were put on the WSLH web site as a reference and also so people who missed the sessions still had access to the information.

"What we've done is really important," Bowman said. "These are tools for the smaller labs to help themselves. They're telling us 'this is what we want and need.'"

Occupational health laboratory receives bioaerosols accreditation

The American Industrial Hygiene Association Laboratory Accreditation Program has approved the Wisconsin Occupational Health Laboratory (WOHL), a part of the WSLH, for accreditation for Environmental Microbiology (Bioaerosols).

This is the first accreditation program in the country for airborne, bulk and wipe fungi and bacteria. The WOHL is among a group of six labs to receive this first round of accreditation.

The WOHL is now accredited for all areas covered by AIHA accreditation (industrial hygiene, environmental lead and environmental microbiology).

For more information, please contact WOHL at (800) 446-0403.

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is published four times a year by the Wisconsin State Laboratory of Hygiene.

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